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EXAMINER

AHMED, SALMAN

ART UNIT

PAPER NUMBER

2666

DATE MAILED: 08/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show numeral 170 in figure 5 as described in the specification page 26 lines 31 and 32. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1, 3, 4, 8, 11, 32 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by “Guide to Wireless LAN Technologies” by Intermec Technologies Corporation.

In regards to claims 1, 3, 4, 8, 11, 32 and 33 a forwarding communication network for a region configured as a daughter network coupled to a parent network, communication network comprising: a hub access-point (HAP) device coupled said parent network and

Art Unit: 2666

configured to engage in outward communication over first wireless channel; a plurality of forwarding access-point (FAP) devices, wherein a first portion of plurality of FAP devices is configured engage in inward communication over said first wireless channel, and wherein a second portion of plurality of FAP devices is configured engage in outward communication over a second wireless channel; and a plurality of customer-premise-equipment (CPE) devices, wherein each CPE device in plurality of CPE devices is configured to engage in inward communication over second wireless channel, and wherein said HAP device is in communication with one of said CPE devices through an FAP device in each of first and second portions of plurality of FAP devices is anticipated by (Page 3 Figure 2) a topology based on access points, where wireless devices connect to the wired LAN backbone for communication with both wired and wireless nodes, (page 6 section *Multiple Frequency Operation*) Modern UHF systems which allow access points to be individually configured for operation on one of several pre-programmed frequencies. Terminals are programmed with a list of all frequencies used in the installed access points, allowing them to change frequencies when roaming. To increase throughput, access points may be installed with overlapping coverage but using different frequencies.

Further in regards to claim 11 Intermec Technologies Corporation teaches of using connectionless 802.11 protocol.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 12, 13, 14, 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation, and in view of Struhsaker et al. (US PAT 6115370), hereinafter referred to as Struhsaker.

In regards to claims 2, 12, 13, 14, 24 and 26 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation teaches WLAN architecture as described in the rejection of claim 1 above.

In regards to claims 2, 12, 13, 14, 24 and 26 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation does not explicitly teach an access points and CPE devices configured to engage in communication over various wireless channel. In regards to claim 13 Intermec Technologies Corporation does not teach of concurrent communication by multiple CPEs.

Art Unit: 2666

In regards to claims 2, 12, 13, 14, 24 and 26 Struhsaker teaches (column 3 lines 11-20) a wireless local loop (WLL) comprising a first interface connecting the WLL to the telecommunications network, a second interface connecting the WLL to a plurality of customer premise equipment (CPE) such as telephones, faxes, and computers, and point to multi-point radio frequency (RF) communications channels connecting the first interface to the second interface. In regards to claim 13, in column 5 lines 22-25, Intermec Technologies Corporation further teaches that by allowing for various individual users that communicate with a single base station, the WLL thus provides point to multi-point RF wireless communications.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Intermec Technologies Corporation's teaching to incorporate Struhsaker's teaching of access points and CPE devices configured to engage in communication over various wireless channels. The motivation is that such configuration would give CPE device to directly and efficiently communicate with the hub access point instead of going through a forward access point thus reducing equipment cost.

6. Claims 5, 6, 7, 16, 17, 18, 21, 22, 23 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation, and in view of Chuah et al. (US PAT 6400722), hereinafter referred to as Chuah.

In regards to claims 5, 6, 7, 16, 17, 18, 21, 22, 23 and 34 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation teaches a WLAN architecture as described in the rejection of claims 1, 12 and 32 above.

In regards to claims 5, 6 and 16 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation does not explicitly teach multiple Access points connected to each other in a multi-hop manner prior connecting to CPE. In regards to claims 7 and 18 by Intermec Technologies Corporation's "Guide to Wireless LAN Technologies" does not explicitly teach using directional antennas. In regards to claim 24 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation does not explicitly teach the stationary nature of the forward access points and hub access points. In regards to claim 17 Intermec Technologies Corporation's "Guide to Wireless LAN Technologies" does not explicitly teach the utilization of various channels during communication.

In regards to claims 5, 6 and 16 Chuah teaches (column 12 lines 23-27) that sometimes, access points are located remotely from the wireless hub and connected via a long distance link like a wired T1 trunk or even a wireless trunk. For multi-sector cells, multiple access points (i.e., one per sector) are used. In regards to claims 7 and 18 Chuah teaches (column 7 lines 36-40) a wireless communication system with multi-sector directional antenna arrangements entitled "Multi-Sector Cell Pattern For A Wireless Communication System", filed on Dec. 26, 1997, by Walter Honcharenko, can

Art Unit: 2666

be used to provide the wireless coverage. In regards to claim 24, Chuah teaches (column 7 lines 26-35) that base stations provide wide-area wireless coverage. Base stations are typically installed in cell sites by PCS (personal communication services) wireless service providers. Base stations multiplex end system traffic from their coverage area to the system's mobile switching center (MSC) over wire line or microwave backhaul network. In regards to claim 17 Chuah teaches (column 48 lines 46-53) a single access

point, access hub (i.e., wireless hub) or inter-working function unit (IWF unit) may provide multi-channel capability. Thus, a single access point or access hub or IWF unit may act on traffic from multiple end systems, and what is described herein as separate access points, access hubs or IWF units contemplates equivalence with a single multi-channel access point, access hub or IWF unit.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Intermec Technologies Corporation's teaching by incorporating Chuah's multihop type access points using multiple channel scheme. The motivation is that wireless access points used as multi-channel wireless bridge are more practical to implement in places where putting wired lan is impossible and expensive.

In regards to claim 21 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation teaches (page 8 section *Unlicensed Radio Frequency Bands above 900 MHz*) using the unlicensed radio frequency for WLAN.

In regards to claim 22 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation teaches of using 802.11 protocols.

In regards to claim 23 and 34 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation teaches (page 6 section *Multiple Frequency Operation*) Modern UHF systems which allow access points to be individually configured for operation on one of several pre-programmed frequencies. Terminals are programmed with a list of all frequencies used in the installed access points, allowing them to change frequencies when roaming. To increase throughput, access points may be installed with overlapping coverage but using different frequencies.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation, and in view of Lueker et al. (US PAT 6130896), hereinafter referred to as Lueker.

"Guide to Wireless LAN Technologies" by Intermec Technologies Corporation, teaches a WLAN architecture as described in the rejection of claim 1 above.

"Guide to Wireless LAN Technologies" by Intermec Technologies Corporation does not explicitly teach Access points perform bidirectional communication.

Art Unit: 2666

Lueker teaches (column 3 lines 19-24) that Access point may be a bidirectional repeater. If access point receives a signal on power line, it provides the signal to antenna. If access point receives a signal on antenna, it provides the signal to power line. Access point thereby extends the network.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Intermec Technologies Corporation's teaching by incorporating Lueker's teaching of bidirectional Access points. The motivation is that bidirectional Access points are more cost effective in the long run in terms of maintenance and cost than unidirectional Access points.

8. Claims 10, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation, and in view of Chu et al. (US PAT 5890055), hereinafter referred to as Chu.

In regards to claims 10, 37 and 38 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation teaches a WLAN architecture as described in the rejection of claims 1 and 12 above.

In regards to claims 10, 37 and 38 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation does not explicitly teach using second Hub Access Points.

In regards to claims 10, 37 and 38 Chu teaches (Figure 1 and column 3 lines 61-63) of using multiple hubs to cover larger area to provide service.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Intermec Technologies Corporation's teaching by incorporating Chu's teaching of second Hub. The motivation is that it is known in the art that to cover larger area multiple hubs may be needed.

9. Claims 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over ("Guide to Wireless LAN Technologies" by Intermec Technologies Corporation in view of Chuah), and in view of Melnik (US PAT PUB 2005/0117526).

In regards to claims 15 and 19 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation in view of Chuah teach a WLAN architecture as described in the rejection of claim 12 above.

In regards to claims 15 and 19 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation in view of Chuah do not explicitly teach using hop-counts data in a multi access point multi cpe network.

Art Unit: 2666

In regards to claims 15 and 19 Melnik teaches (page 5 section 0029) each received packet preferably includes a direction bit which indicates the direction which the received packet must travel to reach the destination node, a first set of bits (e.g., a byte) which includes a hops value which indicates a number N of hops required to transfer the received packet from the sending node to the destination node, and a number of hops count, a second set of bits (e.g., a byte) which includes the routing logical address, and a third set of bits (e.g., a byte) which includes processing instructions for the destination node.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Intermec Technologies Corporation in view of Chuah's teaching by incorporating Melnik's teaching of utilizing hop counts during data communication. The motivation is that it is known in the art to use hop counts in a multi-hop wireless network for optimized routing capability.

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over ("Guide to Wireless LAN Technologies" by Intermec Technologies Corporation in view of Chuah, in view of Melnik), and in view of Katzela et al. (US PAT 5872773), hereinafter referred to as Katzela.

In regards to claim 20 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation in view of Chuah, in view of Melnik teach a WLAN architecture as described in the rejection of claim 16 above.

In regards to claim 20 "Guide to Wireless LAN Technologies" by Intermec Technologies Corporation in view of Chuah, in view of Melnik do not explicitly teach using capacity data for throughput control in a multi access point multi cpe network.

In regards to claim 20 Katzela teaches (column 12 lines 5-8) the explore-route message contains various fields, including the initiating node, neighbor node, next hop node, cycle, spare capacity and number of explored routes fields.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Intermec Technologies Corporation in view of Chuah, in view of Melnik's teaching by incorporating Katzela's teaching of sending capacity data during data communication. The motivation is that such data would enhance network bandwidth and resource management capability of a network making it more reliable.

Allowable Subject Matter

11. Claim 35, 36 and 39 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. Claims 27-31 are allowed.

Reason for Allowance

13. The following is an examiner's statement of reasons for allowance: The instant application claims a method of allocating wireless channels in a forwarding communication network, method comprising: a) coupling a hub access-point (HAP) device of communication network to a parent network; b) Configuring $N-1$ forwarding access-point (FAP) devices, where N is a positive integer greater than 1, wherein $M=M(\max)=(N-1)$ to $M=M(\max)=(N-1)$ each M th FAP device is configured to engage in inward communication over an M th wireless channel and to engage in connectionless outward communication over an $(M+1)$ th wireless channel. c) Configuring said HAP device to engage in outward communication over said $M(\min)$ th wireless channel; d) configuring a customer-premise-equipment (CPE) device to engage in inward communication over said $M(\max)$ th wireless channel; e) establishing a hub-user communication link having N hops between said HAP device and said CPE device through $N-1$ sequential ones of said FAP devices; and f) executing said outward and inward communications over said hub-user communication link.

The prior arts alone or in combination fail to jointly suggest or teach the claimed combination of features as taught by the instant application. The prior arts do not specifically teach a method of allocating wireless channels in a forwarding communication network, method comprising: a) coupling a hub access-point (HAP) device of communication network to a parent network; b) Configuring $N-1$ forwarding access-point (FAP) devices, where N is a positive integer greater than 1, wherein $M=M(\max)=(N-1)$ to $M=M(\max)=(N-1)$ each M th FAP device is configured to engage in inward communication over an M th wireless channel and to engage in connectionless outward communication over an $(M+1)$ th wireless channel. c) Configuring said HAP device to engage in outward communication over said $M(\min)$ th wireless channel; d) configuring a customer-premise-equipment (CPE) device to engage in inward communication over said $M(\max)$ th wireless channel; e) establishing a hub-user communication link having N hops between said HAP device and said CPE device through $N-1$ sequential ones of said FAP devices; and f) executing said outward and inward communications over said hub-user communication link.

Citation of Relevant Prior Art

14. The prior arts made of record and not relied upon are considered pertinent to applicant's disclosure.

US PAT 6590885 B1 IP-flow characterization in a wireless point to multi-point (PTMP) transmission system, Jorgensen

US PAT 6665536 Local area network having multiple channel wireless access, Mahany

US PAT 6680922 Method for the recognition and operation of virtual private networks (VPNs) over a wireless point to multi-point (PtMP) transmission system, Jorgensen

US PAT 20030100343 Communications system and method, Zourntos et al.

US PAT PUB 2003/0204599 Provisioning seamless applications in mobile terminals through registering and transferring of application context, Trossen et al.

US PAT PUB 2004/0014497 Portable wireless gateway, Tjalldin et al.

US PAT PUB 2005/0130701 Metropolitan wide area, Zendle

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Salman Ahmed whose telephone number is (571)272-8307. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571)272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Salman Ahmed
Examiner
Art Unit 2666

SA



DANY TON
PRIMARY EXAMINER